

Substance for Research and Development use only.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**1.1 Product Identifier**

Product Name	VADXX Bulk Pyrolysate
Substance Name	Plastics, waste, pyrolyzed, bulk pyrolysate
EC Number (optional)	N/A
REACH Registration Number	Not applicable
CAS Number	Not available

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses:	Fuel
Uses advised against (if applicable):	Not applicable
Reasons why uses advised against (if applicable):	Not applicable

1.3 Details of the Supplier of the Safety Data Sheet

Manufacturer/Supplier:	VADXX Energy
Street address:	655 South Broadway Street Akron, Ohio 44311
Country ID/Postcode/Place:	USA
Telephone number:	(330) 312-3082
Telefax:	
E-mail address of person responsible for the SDS:	sprybyla@vadxx.com
Name of Importer:	Not applicable
Address of Importer:	Not applicable

1.4 Emergency Phone:	(330)-752-1111
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SECTION 2: HAZARDS IDENTIFICATION**According to OSHA HAZCom 2012; 29 CFR 1910.1200**

ATTENTION: The chemical, physical and toxicological properties of this material have not been fully investigated. Its handling or use may be hazardous. It is only to be used by or under the supervision of technically qualified individuals and using prudent laboratory practices. Use caution.

2.1 Classification of the Substance or Mixture:**According to OSHA HCS §1910.1200 (2012)**

STOT RE 2
Muta. 1B
Carc. 1A
Repr. 2
Asp. Tox. 1

2.2 Label elements**Signal Word**

Danger

Hazard Statements

Combustible liquid
May cause damage to organs through prolonged or repeated exposure.
May cause genetic defects.
May cause cancer.
May damage fertility or the unborn child.
May be fatal if swallowed and enters airways.

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Prevention

If swallowed: Immediately call a poison center or doctor.
Do NOT induce vomiting.
Do not breathe mist/vapors/spray.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/protective clothing/eye protection/face protection.

Response

If exposed or concerned: Get medical advice/attention.

Storage

Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other Hazards**Substances with unknown toxicity****Other hazards which do not result in classification**

No data available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**3.1 Substance**

INGREDIENT	CAS NO.	% WT
Plastics, wastes, pyrolyzed, C5-55 fraction	--	96%
Benzene	71-43-2	0.1 - 3.0%
Naphthalene	91-20-3	0.1 - 4%
Toluene	108-88-3	0.1 - 1.0%

SECTION 4: FIRST AID MEASURES**4.1 Description of first aid measures****General Advice**

If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance.

Eye contact

Immediately flush eyes with large amounts of water for at least 20 minutes, while holding eyelids open. Obtain medical attention immediately, as a precaution.

Skin contact

Wash exposed skin areas with soap and water. If irritation exists, obtain medical attention. Remove contaminated clothing. Wash contaminated clothing before reuse.

Inhalation

Remove to fresh air. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen if a qualified operator is available. Get medical attention.

Ingestion

If person is conscious, give them several glasses of water to drink. Obtain immediate medical attention. DO NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Consult a physician.

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SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Class B fire extinguishing media such as CO₂ or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media

None identified.

5.2 Special hazards arising from the substance or mixture

This material is combustible and can be ignited by heat, sparks, flames, or other sources of ignition. Vapors may travel considerable distance to a source of ignition where they can ignite, flashback, or explode. May create vapor/air explosion hazard indoors, in confined spaces or outdoors. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

5.3 Advice for firefighters

No data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

In circumstances of emergency response involving an inhalation hazard or potential inhalation hazard, personnel must wear positive self-contained breathing apparatus while engaged in the emergency response operations until it is determined through the use of air monitoring that a decreased level of respiratory protection will not result in hazardous exposures to employees (29 CFR 1910.120(q)(3)(iv)).

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions

Follow prescribed procedures for reporting and responding to large spills. Advise the National Response Center if the substance has entered a waterway (1-800-424-8802)

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up

Isolate and evacuate area. Shut off source if it is safe to do so. Eliminate all sources of ignition in the vicinity of the spill or released vapor. Contain to prevent contamination of soil, surface water or ground water. Place contaminated material in disposable containers, and dispose of in a manner consistent with local regulations.

Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

See Sections 7 & 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Follow protective controls set forth in Section 8 of this MSDS when handling this product. Many sources can ignite the vapor, such as: pilot lights, welding equipment, and electrical equipment. Do not cut, drill, grind or weld on empty containers since they may contain explosive residues.

Avoid contact with skin and eyes. Avoid formation of mist. Provide appropriate exhaust ventilation at places where mist and vapors are formed.

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7.2 Conditions for safe storage

Electrostatic charge may accumulate and create a hazardous condition. Review all operations that have the potential to generate an electric charge. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Keep container tightly closed in a dry and well-ventilated place. Keep in a dry place. Air and moisture sensitive. Handle and store under inert gas. Keep in a dry place.

7.3 Specific end uses(s)

See Section 1.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure Limit value (OELs):

Benzene ACGIH TLV TWA: 0.5 ppm (1.6 mg/m³) TWA; 2.5 ppm (8.0 mg/m³)(15-min STEL) (Skin)

Benzene MSHA and OSHA PEL TWA: 1 ppm (3.19 mg/m³)(TWA); 5 ppm (16.0 mg/m³)(15-min STEL); 50 ppm (160 mg/m³)(10-min Peak) in General Industry (29 CFR 1910.1028) 10 ppm (31.9 mg/m³)(TWA); 25 ppm (79.8 mg/m³)(15-min Ceiling) in sectors excluded from General Industry (29 CFR 1926.1028) 1 ppm (3.19

mg/m³)(TWA); 5 ppm (16.0 mg/m³)(15-min STEL); 50 ppm
Toluene: ACGIH TLV TWA: 20 ppm / 75 mg/m³

Toluene MSHA and OSHA PEL TWA: 200 ppm / Ceiling: 300 ppm / Peak: 500 ppm (10 minutes)

Cal/OSHA PELs: 10 ppm (37 mg/m³) TWA / Ceiling: 500 ppm (560 mg/m³) / STEL (skin): 150 ppm (560 mg/m³)

Derived No-Effect Levels (DNELs):

No data available.

Predicted No Effect Concentrations (PNECs):

No data available.

Work Hygiene Practices

Following the guidelines in this SDS are recognized as good industrial hygiene practices. Avoid skin and eye contact. Wash exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use. Use care when laundering clothing to prevent formation of vapors which could ignite the washer or dryer.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.2 Exposure controls

Appropriate engineering controls

Ventilation: Use local exhaust or general ventilation to maintain exposures below appropriate exposure and flammability limits.

Protective measures

No data available

Personal Protective Equipment

Eye and Face Protection

Safety glasses with side shields should be worn.

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin Protection

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

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Hand protection: No data available.

Protective clothing such as gloves, apron, boots, and facial protection should be worn when engineering controls or work practices are not adequate for prevention of skin contact.

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Other protection: No data available

Respiratory Protection:

Use certified respiratory protection equipment meeting NIOSH/MSHA standards when respiratory risks cannot be avoided or sufficiently limited by technical means of collective protection or by measures, methods or procedures of work organization or if the reasonably anticipated exposures will exceed the TWA or STEL. Use a cartridge approved for use with organic vapors.

Environmental Exposure Controls

See Section 6.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties**

Appearance:	Clear yellow-orange to dark brown
Odor:	Hydrocarbon odor
Odor threshold:	No information available.
pH:	No information available.
Melting point:	No information available.
Initial boiling point and boiling range:	No information available.
Flash point:	< 23 °C
Evaporation rate:	No information available.
Flammability (liquid):	Flammable
Lower flammability/explosive limits	No information available.
Upper flammability/explosive limits	No information available.
Vapor pressure:	No information available.
Vapor density:	No information available.
Relative density:	No information available.
Solubility(ies) in water:	No information available.
Partition coefficient, n-octanol/water:	No information available.
Autoignition temperature:	No information available.
Decomposition temperature:	No information available.
Viscosity:	No information available.
Explosive properties:	No information available.
Oxidising properties:	No information available.
9.2 Other information	No additional information available.

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SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

Avoid high temperatures, open flames, sparks, welding, smoking and other sources of ignition.

Contact with incompatible materials (see below).

10.5 Incompatible materials

10.6 Hazardous decomposition products

Combustion can yield carbon dioxide and carbon monoxide.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute toxicity

May cause eye, skin, respiratory and nasal irritation.

Acute oral toxicity

Ingestion of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, coma, and death.

Acute dermal toxicity

May cause skin irritation. Skin contact with benzene may cause redness and sores.

Acute inhalation toxicity

May cause respiratory and nasal irritation. Inhalation (5-10 minutes) of very high levels of benzene (10,000-20,000 ppm) can result in death. Lower levels (700-3,000 ppm) can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness.

Skin corrosion/irritation

Contains substances at low that may cause skin irritation.

Serious eye damage/irritation

Contains substances at low that may cause skin irritation.

Respiratory or Skin sensitization

Germ Cell Mutagenicity

Benzene can cause mutations in the DNA of cells and/or organisms and may cause genetic damage that can be passed on to offspring.

Carcinogenicity

Benzene is on the NTP, OSHA and IARC carcinogen lists. The IARC and the EPA have determined that benzene is carcinogenic to humans (Group 1 Carcinogen). Chronic inhalation of certain levels of benzene causes disorders in the blood in humans, including leukemia (cancer of blood forming organs). Benzene specifically affects bone marrow (the tissues that produce blood cells). Aplastic anemia, excessive bleeding, and damage to the immune system (by changes in blood levels of antibodies and loss of white blood cells) may develop.

Reproductive toxicity

Toluene is classified as a reproductive toxin. High exposure may result in female reproductive system toxicity and pregnancy loss.

Specific Target Organ Toxicity-Single Exposure

Exposures to high levels of benzene or toluene can results in central nervous system impairment including headache, dizziness, impaired vision, impaired hearing, fatigue, weakness, confusion, drowsiness, unconsciousness, and impaired motor functions.

Specific Target Organ Toxicity-Repeated Exposure (STOT-RE)

Aspiration hazard

Vomiting following ingestion can lead to inhalation of the liquid into the lungs which can result in chemical pneumonia or other pulmonary injury or death.

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SECTION 12: ECOLOGICAL INFORMATION

Keep out of all bodies of water and sewage drainage systems. The material may become dispersed in the water column or adsorbed to soil or sediment.

12.1 Toxicity

Acute toxicity to fish	No data available.
Acute toxicity to aquatic invertebrates	No data available.
Acute toxicity to algae	No data available.
Acute toxicity to other organisms	No data available.
Chronic toxicity to fish	No data available.
Chronic toxicity to aquatic invertebrates	No data available.
Chronic toxicity to algae	No data available.
Chronic toxicity to other organisms (bacteria)	No data available.

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

Partition coefficient n-octanol/water (log Kow):	No data available.
Bioconcentration factor (BCF):	No data available.

12.4 Mobility in soil

Known or predicted distribution to environmental compartments:	No data available.
Surface tension:	No data available.
Adsorption/Desorption:	No data available.

12.5 Results of PBT and vPvB assessment**12.6 Other adverse effects**

No data available.

SECTION 13: DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Collect and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations. This material is not listed as a RCRA hazardous waste under Federal Regulations (40 CFR 261-27.1). This material may meet the criteria of an "ignitable" hazardous waste. This material could also become hazardous if mixed or contaminated with a listed hazardous waste. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION 14: TRANSPORT INFORMATION**14.1 UN number**

1268

14.2 UN proper shipping name

Petroleum products, N.O.S.

14.3 Transport hazard class(es)

Class 3

14.4 Packing group

Packing group II

14.5 Environmental hazards

No information available.

14.6 Special precautions for users

No information available

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not required, not intended to be carried in bulk tankers.

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SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

CLEAN WATER ACT (OIL SPILLS): Any spill or release of this product to "navigable waters" or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local authorities.

SARA 311 CATEGORIES:

The Following EPA Hazard Categories apply to this product:

Immediate (Acute) Health Effects

Delayed (Chronic) Health Effects

Fire hazard

Benzene, a possible component of this product, is on the NTP, OSHA and IARC carcinogen lists. The IARC and the EPA have determined that benzene is carcinogenic to humans (Group 1 Carcinogen). Benzene is number six on the CERCLA Priority List of Hazardous Substances.

REACH: This substance has not been registered according to Regulation (EC) No 1907/2006.

US Toxic Substances Control Act (TSCA): This substance is not on the TSCA inventory. It is being produced and provided for research and development purposes only. For use only by technically qualified individuals employing prudent laboratory practices in accordance with 40 CFR 720.36.

15.2 Chemical safety assessment

No chemical safety assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION

Further information

SDS PREPARATION INFORMATION: Date Generated:

July 17, 2014

Date Revised: None

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